WATER TREATMENT SYSTEMS – FACT SHEET

Which water treatment systems are regulated?

- Water treatment systems used to remove substances (such as arsenic or nitrates) exceeding the Maximum Contaminant Level (MCL) are regulated. These are considered "treatment systems for public health purposes".
- Also, any treatment system that injects chemicals into the water is a regulated treatment system.

Which water treatment systems are not regulated?

- When not used to meet an MCL, softeners, filters, activated carbon, reverse osmosis (RO), ultraviolet (UV) light, and air injected and intermittent regeneration greensand iron removal filters are not regulated.

What do regulated water treatment systems require?

- All regulated treatment systems require 1. A construction permit, 2. A D-5 level operator, and 3. Monthly Operation Reports (MOR). (See Rule 1304(1) of the Michigan Safe Drinking Water Act – Act 399)

What is the construction permit application process?

1. Water supply owner or treatment installer makes 2 copies of the application package (application form, plans, specifications, and operation and maintenance manual) and submits one copy to the Local Health Department (LHD) and one copy to the Department of Environmental Quality (DEQ) at the address on the application form.
2. The DEQ will review the construction permit application and work with the applicant to correct any deficiencies. (The LHD can do a concurrent review, if desired.)
3. After the application package is approved, DEQ will write a letter to the LHD requesting LHD staff issue a construction permit letter.
4. The LHD will issue a construction permit letter.
5. After treatment is installed, the LHD will do a final inspection. DEQ staff can assist on final inspection if needed.
6. The LHD issues final approval on the system following disinfection and satisfactory water sample results (two total coliform samples 24 hours apart and 1 sample that is below the MCL).

Can an existing regulated water treatment system be modified?

- Significant changes to existing regulated water treatment systems must be reviewed and approved by the DEQ.
- Re-bedding existing arsenic treatment systems with the same volume and type of media as originally approved by the DEQ can be approved by the LHD. The LHD will notify the DEQ.
- After major changes to the water system, a new running annual average will begin, and any previous MCL violations will be closed-out (SOXd) after the first sample result meets the MCL.
- LHD staff can request copies of the DEQ treatment files for regulated treatment systems.

Are all treatment systems approved?

- Anything that touches the water must be National Sanitation Foundation (NSF) certified. NSF 61 certification is used for treatment system components and media. NSF 60 certification is used for treatment chemical certification. Water treatment units are certified to other standards (RO NSF 58, softeners NSF 44, UV light NSF 55, health effects NSF 53, etc.). These certifications show the equipment will not leach harmful chemicals into the water, and are required for regulated treatment (See Rule 2102(3)).The DEQ does not review unregulated water treatment systems.

What if the LHD doesn't have a permit or records for an existing treatment system?

- The owner shall provide in writing: 1. The type of water treatment system (including make/model), and 2. The purpose of the system.
- When in doubt, take photos, write down make/model and email them to the DEQ for guidance.

Who do I contact with questions?

- Water supply owners and certified operators should contact their LHD. LHDs should contact their DEQ area representative.

WATER TREATMENT SYSTEMS – QUICK REFERENCE GUIDE

Type of Treatment	General Purpose	How it Works	Regulated (construction permit, certified operator, and monthly operation reports are all required)	Cross Connection Control
Cation Exchange (Softeners)	Removes hardness and iron	The calcium and magnesium ions in the water are replaced with sodium or potassium ions.	No	Air gap on wastewater line
Anion Exchange	Removes nitrate or arsenic	The nitrate or arsenic ions in the water are replaced with chloride ions.	Yes	Air gap on wastewater line
Chlorine Injection	Disinfection or oxidation	Oxidizing agents are used to convert dissolved iron and other ions to a solid form that can be filtered out.	Yes	Air gap on wastewater line
Greensand Iron Removal with chemical injection	Removes iron, manganese, arsenic, hydrogen sulfide	Manganese, iron, etc. are oxidized and precipitated by contact with an oxidizing agent and then filtered out with green sand media.	Yes, if continuous regeneration where oxidation chemicals are injected before the filter. No, if intermittent regeneration where the oxidation chemical is used only in the backwash cycle for media regeneration.	Air gap on wastewater line
Greensand Iron Removal with air injection	Removes iron, manganese, arsenic, hydrogen sulfide	Manganese, iron, etc. are oxidized and precipitated by air injection and are trapped in the sand and held there.	Yes, if used to reduce an MCL.	Air gap on wastewater line
Phosphate or silicate injection	Corrosion control	Phosphate and silicate coats piping walls to isolate aggressive water. Chlorine is injected with phosphate to prevent bacterial growth.	Yes	Air gap on wastewater line
Reverse osmosis	Removes nitrates, arsenic, calcium, iron, metals, dissolved solids, organics, viruses	Water is pressurized and passed through a semi-permeable membrane.	Yes, if used to reduce an MCL.	Air gap on wastewater line
Activated carbon	Removes odors, tastes, chlorine, and organics	Impurities are absorbed as they pass through a carbon cartridge.	Yes, if used to reduce an MCL.	NA
Ultraviolet (UV) light disinfection	Disinfection	Ultraviolet light disinfects the water or reduces the amount of bacteria present in the water.	No	NA
Cartridge filters	Removes particulates; taste and order control	Water is forced through a fiber filter and sediment is trapped in the filter.	No	NA
Calcite media	pH adjustment for corrosion control of piping and fixtures,	Acidic water slowly dissolves the calcium carbonate to raise the pH.	No	NA
Ozone	Disinfection or oxidation	Manganese, iron, etc. are oxidized and then removed by post-filtration.	Yes	Air gap on wastewater line